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ANALYTICAL ABSTRACTS OF CURRENT LITERATURE.

Eastern Boundary of the Connecticut Triassic. By W. M. DAVIS and L. S. GRISWOLD. Bull. Geol. Soc. Amer., Vol. 5, pp. 515–530. April, 1894.

Some New Red Horizons. By BENJAMIN SMITH LYMAN. Proc. Amer. Philos. Soc., Vol. 33, pp. 192–215. June, 1894.

The "Triassic" of Davis and Griswold and the "New Red" of Lyman are the same series of strata, the series for which Redfield proposed the non-committal name "Newark."

The first paper is introduced by an outline of the geologic history of the district, the main points of which had been previously published by Davis. The Triassic beds were deposited unconformably on crystalline and metamorphic rocks to a depth of at least 11,000 or 12,000 feet. Their sequence is interrupted by trap sheets, partly contemporary and partly intrusive. They were uplifted, faulted, tilted and degraded, being reduced to base level in Cretaceous time. Uplift and further extensive degradation followed in Tertiary time, and the work of Pleistocene ice modified topographic details.

The eastern boundary of the Triassic area is determined by five faults. Three trend north and south and have downthrow to the west. Two trend northeast and southwest, intersecting the others, and have downthrow to the northwest. Points of intersections are marked by two salient and reëntrant angles in the boundary. The transverse faults are identified with faults observed in the centre of the area and there found to involve displacements of 2,000 and 1,000 feet respectively. One of the meridinal faults shows a maximum displacement of not less than 9,000 feet. Great pains are taken to explain the nature of the evidence on which these results are founded.

The second paper is based primarily on a minute survey of the New Red in Montgomery and Bucks Counties, Pa., where the series is composed of five formations, the Pottstown (youngest), Perkasie, Lansdale, Gwynedd and Norristown, with a total thickness of at least 27,000 feet. The formations dip toward the northwest and their outcrops are partly duplicated by a great fault (described in an earlier article by the same author). Their representatives are conjecturally identified in other counties and states, partly from stratigraphic descriptions, partly from structural studies conducted by comparing reported dips with topographic details represented on the contour maps of the New Jersey and United States Surveys. Hypothetic maps and sections are given of the New Red in New Jersey, New York, Connecticut and Massachusetts. The structure ascribed to the Connecticut field differs radically from that of Davis and Griswold, being characterized by folds instead of faults. All trap sheets are held to be contemporaneous.

With the aid of these maps and other conjectures ninety-one localities of fossils, ranging from Massachusetts to North Carolina, are classified with reference to the five formations discriminated in Pennsylvania; and lists are given of the species reported from the several localities. It is thought that the uppermost and lowermost beds may differ widely in age, the Norristown being possibly as old as Permian.

The paper is emphatic, not to say eloquent, in its characterization of the fatuity of the opinions it controverts, but the dangers which lurk in rhetoric are minimized by the suppression of names.

It is only through extrapolation that the two researches are made to appear discordant. If the structural results of elaborate field study in Pennsylvania be compared with the results of similar work in Connecticut, substantial agreement is found. In each district the series is very thick, has a dominant dip in one direction and is expanded in outcrop by faulting. G. K. G.

The Optical Recognition and Economic Importance of the Common Minerals Found in Building Stones. By LEA McI. LUQUER. (School of Mines Quarterly, Vol. XV., No. 4, July, 1894).

The microscopic examination of thin sections of building stones was first recommended by Cordier in 1816, and H. C. Sorby was one of the first to successfully put it in practice. The facts determined by the microscope are divided into two classes: 1. Mineralogical, including (*a*) the component minerals, (*b*) the chemical composition of the minerals, (*c*) the condition of the minerals. 2. Physical or structural, including (*a*) porosity, (*b*) cohesion, (*c*) homogeneity. Thirty-eight rock-forming minerals are described, and a short bibliography is given of the articles consulted in the preparation. T. C. H.

Landscape Marble. By BEEBE THOMPSON (The Quarterly Journal, Geological Society, Vol. L., Part 3, No. 199, August, 1894, pp. 393–410).

The first published description of the landscape marble occurs in a work by Edward Owen in 1754. The name "Cotham Stone" comes from Cotham House, near which it was quarried. The stone is described as a close-grained argillaceous limestone with no distinct evidence of concretionary origin. The upper surface is often much wrinkled, the interior characterized by dark markings. Two landscapes are shown in some specimens. The microscopic and chemical characteristics and mode of occurrence are briefly described. The following theories, proposed by others to account for the peculiar markings, Mr. Thompson considers inadequate: (1) Escape of imprisoned air; (2) gaseous emanations; (3) infiltration of dark mineral matter; (4) shrinkage of the stone. He thinks they are due to interbedded layers of vegetable matter. Experiments were made to reproduce the characteristics of the landscape marble, and an imaginative word-picture is drawn of the conditions under which the writer supposes the stone to have been formed. T. C. H.

The Famous Connecticut Brownstone. By BURTON H. ALLBEE (Stone, Vol. IX., No. 1, June, 1894, pp. 1–31).

The famous Connecticut brownstone quarries at Portland have been operated for more than 200 years, and at the present time are worked on a gigantic scale. Mention is made of these quarries in the official records of Middletown, September 4, 1665, and in 1690 six acres were sold to the town by the Middlesex Quarry Co. The quarrying is done at present by three companies, who utilize more than 1,000 acres, and employ 1,000 to 1,200 men. The annual production varies from 1,700,000 to 2,000,000 cubic feet, half of which is high-grade dimension stone and the remainder used for piers, foundations, etc. The quarries are located on the bank of the Connecticut river, stretching for two miles along its course. Channelers, steam drills, and blasting are employed in the quarry. Average blocks are from two to five feet thick, but blocks measuring 128 feet by 20 feet by 11 feet have been loosened. The quarries are now 200 feet deep.

The stone is of Triassic age, and has long been noted for the bird and bird-like serpent tracks which occur in it. Chemical analysis shows it to contain 70.11 per cent. silica, 13.49 per cent. alumina, and a small per cent. each of iron oxide, manganese, lime, magnesia, soda, and potash. It has a specific gravity of 2.35 and weighs 150.75 lbs. per cubic foot. It has a crushing strength of 10,000 to 10,900 lbs. per square inch.

The stone has been used to some extent for monuments but is primarily a high-grade building stone, and as such has been shipped to all parts of the United States. Its great durability is shown by the fact that on tombstones which have been standing more than 200 years the lettering is still distinct. The article is illustrated by thirty full-page plates, one a representation of the brownstone in colors. T. C. H.

The Lake Superior Sandstones. By H. G. ROTHWELL (Stone, Vol. IX., No. 1, June, 1894, pp. 59–61).

The article is supplementary to an earlier one published in the proceedings of the Michigan Engineering Society for 1891. The quarries at or near

Ashland and on the island of Bayfield produce an excellent building stone, yet not without defects. From one of the quarries the largest block of sandstone ever quarried was taken.

The Portage-Entry red sandstone is very popular on account of its fine grain, easy splitting and sawing qualities, and easy manipulation under the tool. In some localities it loses its bright color and becomes streaked. The Marquette Raindrop stone is rapidly growing in favor. It is of Potsdam age and older than the preceding stone. The sandstone from Keweenaw Bay took first prize at Philadelphia and Chicago for building sandstone. Analyses and crushing strength of the different varieties are given. T. C. H.

The Great Bluestone Industry. By HENRY BALCH INGRAM (Popular Science Monthly, July, 1894).

The writer states that New York City, which uses such large quantities of North or Hudson river bluestone flagging, has the finest sidewalk pavements in the world. The bluestone is a fine-grained, compact sandstone, extremely hard and made up of microscopic crystals of the sharpest sand. The stone occurs in a belt stretching from the Helderberg Mountains in Albany county diagonally across the southeastern portion of the state into Pike and Wayne counties, Pennsylvania. The belt varies in width, being in the shape of a scalene or obtuse triangle. The best quality of stone found along this belt is in Ulster county, where it has a medium to dark blue color. In the north part of the belt it has a gray color, and in the south part a deep red. So far as known the first quarry of this stone was opened near Kingston, in 1826. It is now one of the important industries of the state, the product of the quarries amounting annually to nearly $3,000,000. One quarry at West Hurley, known as the Lawson quarry, is said to have produced more than $4,000,000 worth of bluestone. The stone occurs in blocks piled up like cardboard, which are wedged off, lifted out, and cut up into the sizes required. Some are too small for flagging and are used for coping, pillar caps, etc. Sometimes monoliths of great size are obtained; one being 20 × 24 feet and 9 inches thick. The bluestone in Ulster county, New York, belongs to the Hamilton period, while that quarried in the other counties belongs to the Catskill group of Devonian age

T. C. H.